CONCLUSION

Applicants respectfully request that the Examiner reconsider the Application and claims in light of the foregoing Supplemental Amendment and respectfully submit that the claims, as amended, are in condition for allowance, which action they respectfully solicit. If, in the Examiner's opinion, a telephone interview would expedite the favorable prosecution of the present Application, the undersigned Applicants would welcome the opportunity to discuss any outstanding issues, and to work with the Examiner toward placing the Application in condition for allowance.

If, for any reason this application is not believed to be in full condition for allowance, applicants respectfully request the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. § 2173.02 and § 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Respectfully submitted,

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CLEAN COPY OF ALL PENDING CLAIMS

1. (Withdrawn) A ferroelectric single crystal, consisting essentially of:
the potassium tantalate; and
the alkali metal or the group (V) metal;
said alkali metal substitutes for from about 1% to about 3% of the potassium, said group (V) metal substitutes for a part of the tantalum; and
said single crystal having cubic form of perovskite crystalline structure is essentially free of impurities and defects.

2. Canceled.

3. (Withdrawn) The single crystal according to claim 1, wherein said group (V) metal is niobium, said niobium substituting of up to about 40% of tantalum, whereby forming a $KNb_{(0-0.4)}Ta_{(1-0.6)}O_3$ composition.

4. (Withdrawn) The single crystal according to claim 3, consisting of lithium substituting for up to 0.1% of potassium.

5. (Withdrawn) A method of production a ferroelectric single crystal consisting essentially of the potassium tantalate and the alkali metal substituting from about 1% to about 3% of the potassium or the group (V) metal substituting in part for the tantalum, said single crystal having cubic form of perovskite crystalline structure is essentially free of impurities and defects comprising the steps of:

a) providing the potassium precursor, a tantalum foil, and the alkali metal precursor or a group (V) metal foil;
(b) heating said tantalum foil in the oxygen, whereby synthesizing the tantalum oxide;
(c) if said group (V) metal required, heating said group (V) metal foil in the oxygen whereby synthesizing the group (V) metal oxide;
(d) creating a mixture of said potassium precursor, said tantalum oxide, and said alkali metal precursor or said group (V) metal oxide;
(e) heating said mixture in a crucible to obtain a melt;
(f) contacting a lower end of a seed crystal with a surface of said melt;
(g) lifting without rotation said seed crystal to grow a single crystal, wherein said crucible is not moved;

(h) separating the grown single crystal from said melt; and

(i) cooling said single crystal to the ambient temperature.

6. (Withdrawn) The method according to claim 5, wherein said potassium precursor is the potassium carbonate K2CO3.

7. (Withdrawn) The method according to claim 5, wherein said alkali metal precursor is the lithium carbonate Li2CO3.

8. (Withdrawn) The method according to claim 5, wherein said group (V) metal foil is a niobium foil.

9. Canceled..

10. Canceled.

11. Canceled.

12. Canceled.

13. Canceled.

14. Canceled.

15. (Amended) An EPR spectrometer comprising:

a rectangular cavity having opposing wide sides and narrow sides;

a magnet with planar poles disposed parallel and in close proximity to each of said wide sides;

a radio frequency AC generator with connecting wires;

a ferroelectric single crystal resonator;

a through hole in said ferroelectric single crystal resonator;

a sample hole; and

connection holes;

said sample hole and said connection holes are perpendicular to and through at least one of said narrow sides of said rectangular cavity, said ferroelectric single crystal resonator positioned

within said rectangular cavity between said planar poles with said through hole perpendicular to said narrow sides, said sample hole is coaxial with said through hole, said connection holes are located in close proximity to said ferroelectric single crystal resonator, and said connecting wires are inserted in said connection holes.

16. (Amended) The EPR spectrometer according to claim 15, wherein said ferroelectric single crystal resonator is a ferroelectric single crystal consisting essentially of potassium tantalate and alkali metal, said alkali metal substitutes for from about 1% to about 3% of the potassium, said ferroelectric single crystal having cubic form of perovskite crystalline structure is essentially free of impurities and defects.

17. The EPR spectrometer according to claim 16, wherein said ferroelectric single crystal resonator characterized by a shape substantially symmetrical relative to three mutually perpendicular planes and axes with the through hole along one of said axes.

18. (Withdrawn) A NMR spectrometer comprising:

a magnet forming a static homogeneous magnetic field;

a probe with means for transmitting a radio frequency magnetic pulse and detecting NMR signal;

a ferroelectric single crystal resonator; and

a through hole in said ferroelectric single crystal resonator.

19. (Withdrawn) The NMR spectrometer according to claim 18, wherein a resonant frequency of said ferroelectric single crystal resonator is effectively a multiple of the NMR spectrometer frequency.

20. (Withdrawn) The NMR spectrometer according to claim 18, wherein said probe, said ferroelectric single crystal resonator, and said hole are substantially coaxial with said static homogeneous magnetic field axis.

21. Canceled.

22. (New) The EPR spectrometer according to claim 16, wherein said alkali metal in said ferroelectric single crystal is lithium, whereby forming a $K_{(0.97-0.99)}Li_{(0.03-0.01)}TaO_3$ composition of said ferroelectric single crystal.

23. (New) The EPR spectrometer according to claim 15 comprising a microwave generator having a noise spectrum comparable to a Gunn oscillator as a microwave energy source.

24. (New) The EPR spectrometer according to claim 23 wherein said microwave generator comprises a semiconductor Gunn type oscillator.

25. (New) The EPR spectrometer according to claim 23 comprising means for detecting the electron paramagnetic resonance of a sample.

26. (New) The EPR spectrometer according to claim 25 wherein said means for detecting the electron paramagnetic resonance of said sample comprising a balance mixer and a detector diode.

27. (New) The EPR spectrometer according to claim 25 comprising means for branching microwave energy from said microwave generator to said ferroelectric single crystal resonator and said means for detecting the electron paramagnetic resonance of said sample.

28. (New) The EPR spectrometer according to claim 27 comprising means for conducting microwave energy from said means for branching microwave energy to said ferroelectric single crystal resonator, from said ferroelectric single crystal resonator to said means for detecting the electron paramagnetic resonance of said sample, and from said means for branching microwave energy to said means for detecting the electron paramagnetic resonance.

29. (New) The EPR spectrometer according to claim 28 wherein said means for conducting microwave energy from said means for branching microwave energy to said ferroelectric single crystal resonator and from said ferroelectric single crystal resonator to said means for detecting the electron paramagnetic resonance of said sample comprising wave guides connecting said rectangular cavity to said means for branching microwave energy and said means for detecting the electron paramagnetic resonance.